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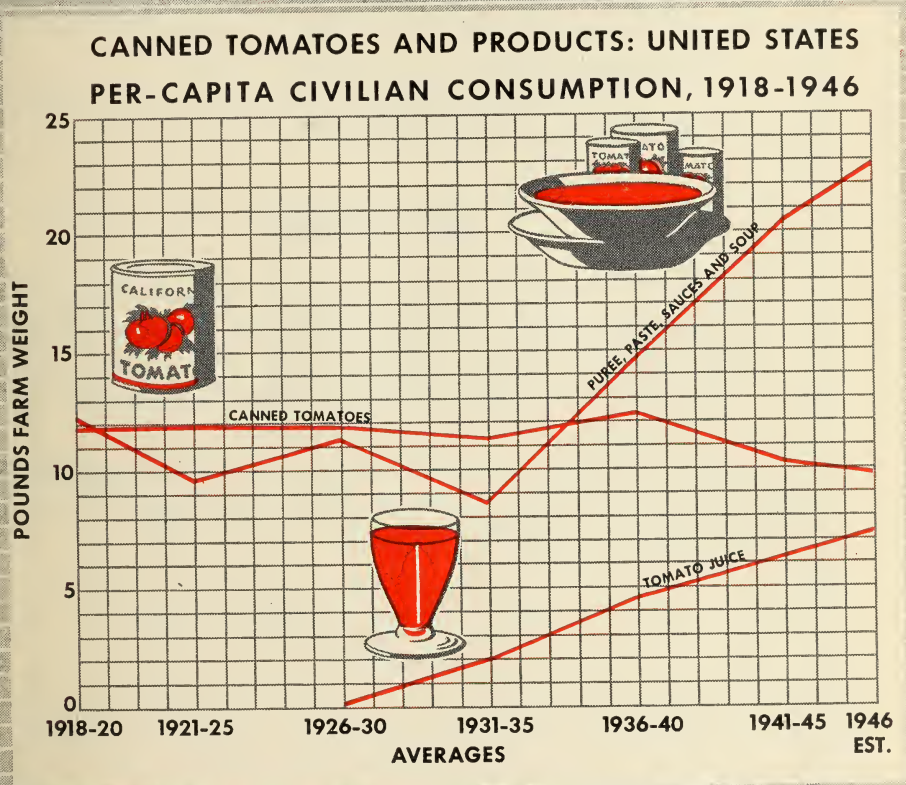
CANNING TOMATOES

SITUATION IN CALIFORNIA, 1947

WALTER D. FISHER



THE COLLEGE OF AGRICULTURE
UNIVERSITY OF CALIFORNIA · BERKELEY

THE SITUATION

IN THE PAST TWENTY-FIVE YEARS, *and particularly during World War II, consumption of tomatoes and tomato products has increased greatly, both in California and in the United States as a whole. This demand is the result of population growth, changing food habits, and higher incomes.*

California now produces over one third of the country's canning tomatoes, and puts up a large percentage of the country's pack of tomato paste and sauces. Its 1946 crop was the largest in history.

The state's main producing areas are the counties surrounding the Delta and San Francisco Bay.

THE OUTLOOK

SOME, *but not all of the expanded production will continue. The over-all picture depends on national consumer income, a factor which cannot be accurately predicted.*

Since the 1946 crop was so large, canners' demands for 1947 will be below those of the previous year.

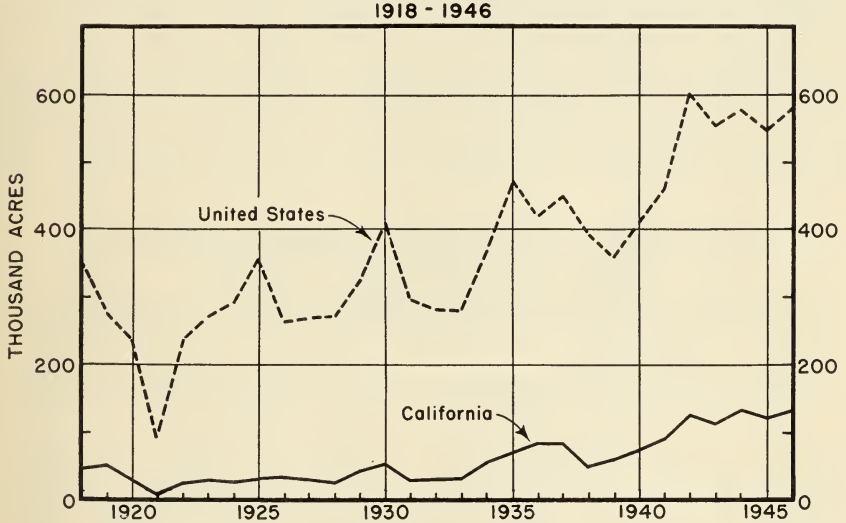
With these facts in mind, both growers and canners should keep informed on economic trends in the nation as well as conditions in their own localities.

CANNING TOMATOES
Situation in California, 1947

Walter D. Fisher[1]

THE CANNING TOMATO crop in California is an important part of the agriculture of the state. In 1946 the dollar value of the crop on the farm was 10.4 per cent of the value of all vegetable and melon crops and was second only to lettuce. Tomatoes are even more important to California canners. Of the total pack of canned vegetables in California in 1946, 79 per cent were products from tomatoes, and of the pack of all fruits and vegetables combined, the fraction was 39 per cent.

FIG. 1: ACREAGE IN CANNING TOMATOES - UNITED STATES AND CALIFORNIA 1918 - 1946



Tomato growers need to know the market situation in order to plan their future operations. To arrive at correct conclusions, growers should estimate not only the prospects for tomatoes but also for the other crops that can be grown on the same land—sugar beets, for example. They should also estimate the relative costs of producing these crops. This circular, because it considers tomatoes alone, gives only a part of the information needed by the tomato grower. Some data on other crops has been published, and more information will appear in future circulars.

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Growth of the Tomato Industry

United States production has increased greatly . . . California shows the sharpest rise, especially in the central part of the state

Trend of Growth.—In the last twenty-five years, acreage in canning tomatoes has expanded greatly in the United States (see fig. 1). In California this expansion has been so great that in 1946 the 132,000 acres harvested was almost double the 1936–1940 average of 68,000 acres. This average of 68,000 acres is more than double the 1921–1925 average of 23,100 acres harvested.

Yields per acre of tomatoes have also tended to rise steadily. California yields are consistently higher than the United States average (fig. 2). In 1946 California yields set a record high of 10.1 tons per acre, which was due to extremely favorable weather conditions.

In the last ten years the percentage increase of tomato acreage and production has been higher in California than in the United States as a whole (fig. 3). In both cases the percentage increase in production is greater than the percentage increase in acreage. This fact is due to increasing yields per acre.

Regions Within the United States.—In the last ten years California has increased its relative position as a producer of canning tomatoes in comparison with other parts of the United States. During the years 1941–1945, California produced 29 per cent of the United States tonnage (fig. 4). This is a slight increase over California's share of production in the five years 1936–1940. In 1946 the state's production was 38 per cent of the United States total. Cali-

FIG. 2: YIELD PER ACRE OF CANNING TOMATOES - UNITED STATES AND CALIFORNIA 1918 - 1946

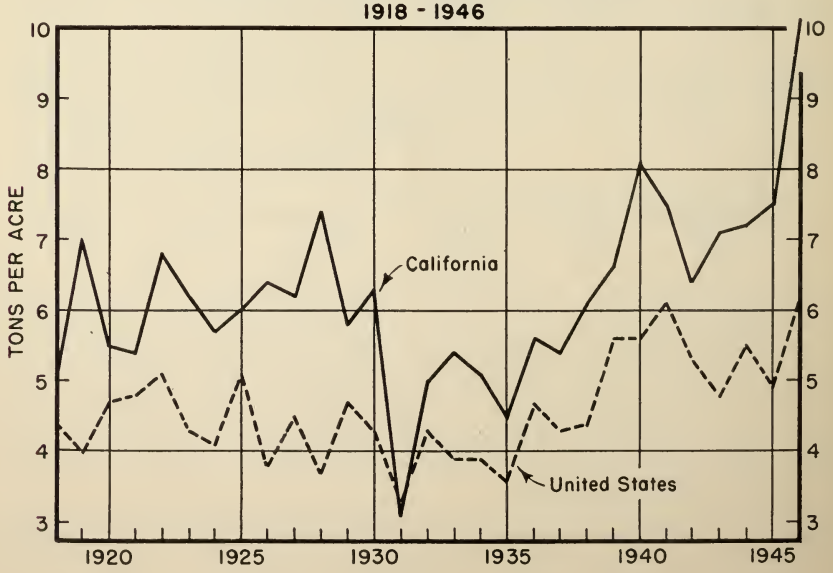
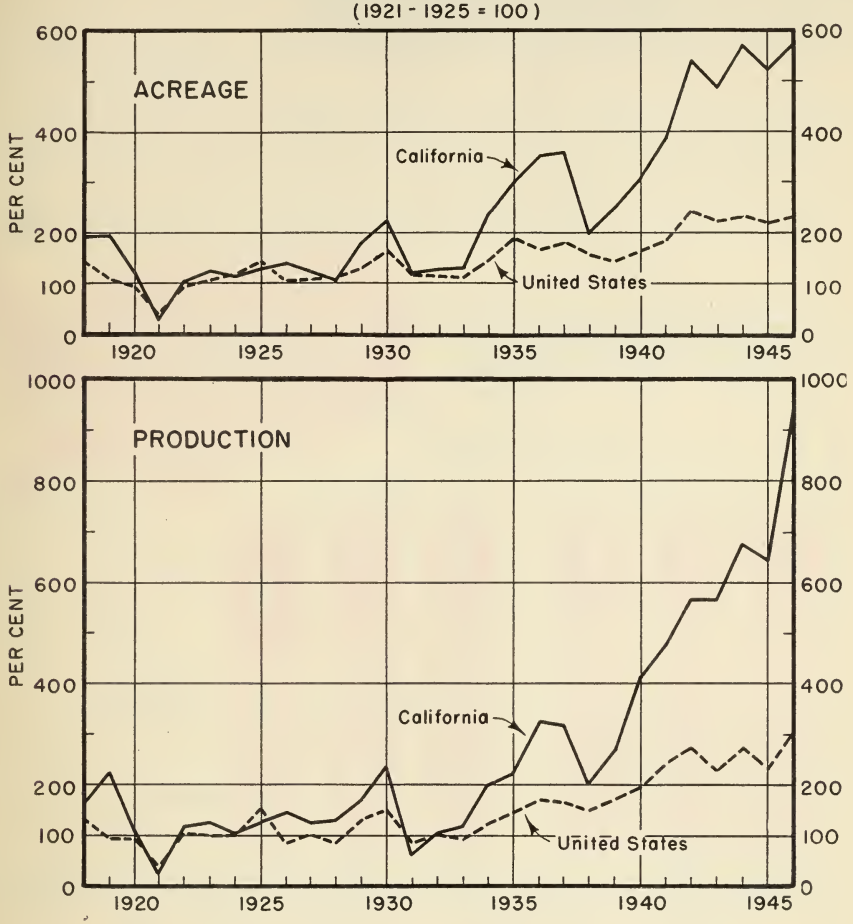


FIG. 3: PERCENTAGE CHANGES IN ACREAGE AND PRODUCTION OF CANNING TOMATOES : 1918 - 1946
(1921 - 1925 = 100)

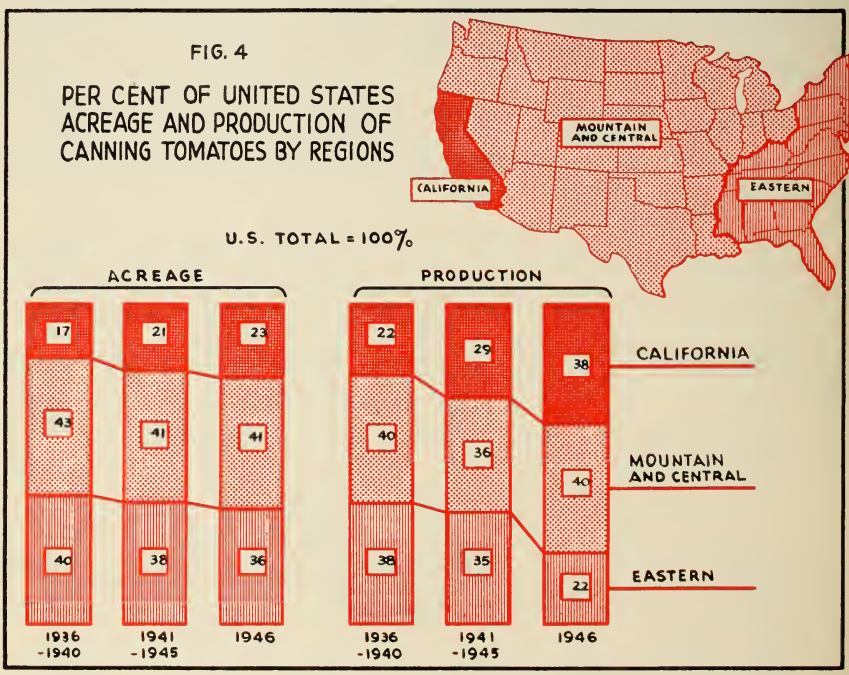


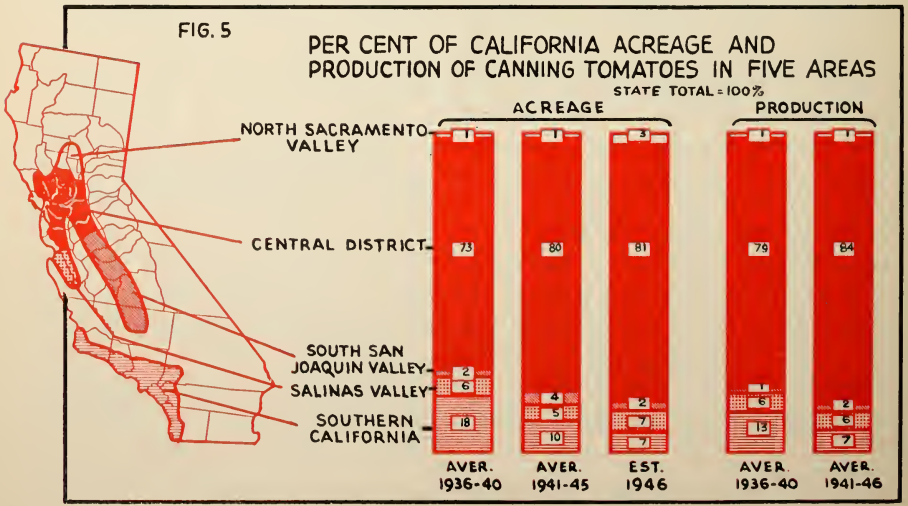
fornia is the most important producing state, the next ones in importance being Indiana, Maryland, and New Jersey.

The increase in California's relative share of United States tomato production has been at the expense of states east of the Mississippi and Ohio rivers. The large percentage in 1946 was caused largely by damage to eastern crops from late tomato blight.

Areas Within California.—The most important area of production of canning tomatoes in California is in the counties surrounding the Delta and San Francisco Bay. The ten counties in this area (bounded on the map in fig. 5) produced 84 per cent of the California state total during 1941–1945. Six of these counties—San Joaquin, Sacramento, Yolo, Alameda, Contra Costa, and Santa Clara—together produced 73 per cent of the state total during these years.

In recent years central California has slightly increased its relative position in comparison with southern California as a producer of canning tomatoes. In 1941–1945 southern California produced only 7 per cent of the state tonnage whereas in 1936-1940 it had produced 13 per cent (fig. 5). Harvested acreage in southern California was 18 per cent of the state total in 1936–1940, 10 per cent in 1941–1945, and an estimated 7 per cent in 1946. Southern California is of greater importance as a producer of tomatoes for fresh market than for canning, probably because climatic conditions and movement of population to that area have made such production more profitable in recent years.





Uses of Fresh Tomatoes

Most California tomatoes go into concentrated products . . . demand for such products increased greatly during World War II

Relative Importance of Products.—In California, tomato products requiring some degree of concentration, such as purée, paste, soups, and table sauces, are an important part of the total fresh tonnage grown in the state. Tomatoes for fresh market, tomatoes canned in solid form, and tomato juice are less important in California than in the United States as a whole. In California,

Table 1

PER CENT OF FRESH TOMATO TONNAGE IN DIFFERENT COMMERCIAL USES

Use	California		United States	
	1936–1940	1941–1945	1936–1940	1941–1945
Fresh tomatoes	20	15	25	20
Canned tomatoes	16	11	29	24
Juice	8	11	12	14
Purée	6	11	5	7
Paste	25	26	5	9
Sauces and soups	25	26	24	26

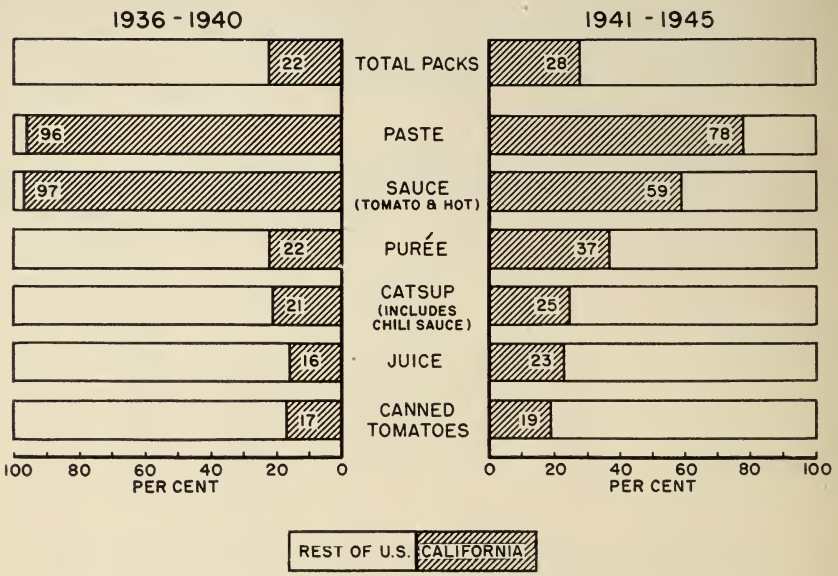
purée, paste, sauces, and soups together accounted for 56 per cent of the fresh tonnage grown during the years 1936–1940, and increased to 63 per cent during the years 1941–1945 (table 1). Tomatoes shipped to markets in fresh form were 20 per cent of total California tonnage in 1936–1940 and 15 per cent in 1941–1945. Canned tomatoes and juice together were 24 per cent in the earlier period and 22 per cent in the later. In the United States as a whole, fresh tomatoes, canned tomatoes, and juice together constituted 66 per cent of total fresh tonnage in 1936–1940, declining to 58 per cent in 1941–1945. It can be seen that the market situation for the concentrated products mentioned is of more importance to California canners and growers than solid-pack tomatoes and tomato juice.

Of various tomato packs put up, California's contribution is largest for paste and sauce, being 78 per cent and 59 per cent, respectively, of the United States packs in 1941–1945 (fig. 6). There has been some decline in the state's percentage of these two packs during the war years, but this decline has been caused by increases in production in other parts of the United States and does not represent an absolute decline. In the case of tomato purée, California has increased its share of the national total from 22 per cent in 1936–1940 to 37 per cent in 1941–1945. California's share of the national total output of tomato juice increased from 16 per cent to 23 per cent (fig. 6).

Shift During War.—The decline in relative importance of canned tomatoes and tomato juice in contrast to the other tomato products during the war was

due chiefly to shortages of tin and of processing labor. It requires more labor to put up tomatoes in solid form, and more tin to put them up in solid pack or in juice than in concentrated products. These products will probably be more important in future years than they were before 1941, even if they do not make up as high a percentage of fresh tonnage as they did during the war.

FIG. 6: CALIFORNIA PERCENTAGE OF U. S. TOMATO PACKS



Consumption

The American housewife has bought more tomato products during recent years

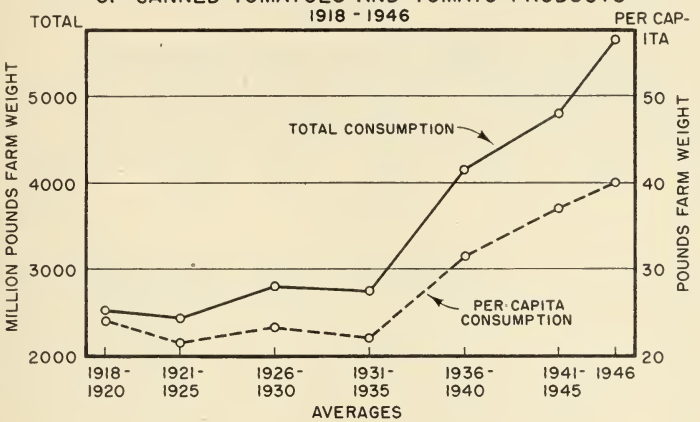
A National Market.—The California grower of canning tomatoes sells his product to a canner, who in turn puts up packs of various products that are sold throughout the United States and even abroad. California products compete with similar products from other areas in the United States national market. Consumer demand in the United States market will determine how large a pack can be sold and also how large an acreage California canners will want to contract from growers.

Foreign trade has not been important in marketing of tomatoes and probably will not become so in the future. At no time since data have been collected have imports of tomatoes and tomato products into the United States amounted to more than 11 per cent of total United States consumption. And until World War II, exports from the United States did not amount to more than 5 per cent of total United States production. Since tomatoes can be

grown in most temperate climates, in times of peace only small quantities move in foreign trade. During the war there was a large movement to United States armed forces, but in the future the really important factor to growers will be the consumption of the various tomato products by the people of the United States.

General Trend.—Since the early 1920's, consumption of canned tomatoes and tomato products in the United States has steadily increased both in total amount and on a per-capita basis (fig. 7). (Per-capita consumption is figured by dividing total consumption by civilian population, excluding the armed services.) The increase in consumption was moderate during the 1920's and

FIG. 7: TREND OF UNITED STATES CIVILIAN CONSUMPTION OF CANNED TOMATOES AND TOMATO PRODUCTS 1918 - 1946



more rapid during the 1930's and 1940's. Because of the gradual growth of population, total consumption increased at a faster rate than did per-capita. During the years 1941–1945, in spite of war rationing of canned tomato products, civilian families on the average ate more processed tomatoes (37.0 pounds per year per capita) than they did during the five years 1936–1940 (31.6 pounds per year). If this trend continues into the 1946–47 marketing year, per-capita consumption will reach 40 pounds farm weight.

Comparison Among Products.—This increase in consumption has not been the same for the different products packed. In the last twenty-five years consumers have been buying about the same amount of tomatoes canned in solid form—somewhat less in recent years (see figure on cover). They have, however, been buying increased amounts of tomato purée, paste, sauces, and soups, and the farm weight consumed in the form of these products has in recent years been much greater than that of canned tomatoes. Per-capita consumption of these products in 1946–47 (22.9 pounds) is expected to be more than double the average of the 1920's and early 1930's, and also double the expected per-capita consumption of canned tomatoes in 1946 (9.8 pounds).

Tomato juice was unknown as a commercial product until the late 1920's, but since that time it has increased steadily in importance until at present consumers are buying almost as much juice as they are canned tomatoes in terms of farm weight.

Market Demand

Population growth, higher incomes, and changes in eating habits have created a greater market for tomato products

Population.—Civilian population of the United States has grown steadily except during World War II, when men were inducted into the armed services (fig. 8). With the release of men from military service and an increased marriage rate, civilian population will increase at a faster rate in the near future.

Income.—Disposable income of consumers—that is, income received minus personal taxes—determines the amount of money consumers can afford to

FIG. 8: TREND OF CIVILIAN POPULATION AND DISPOSABLE INCOME IN THE UNITED STATES

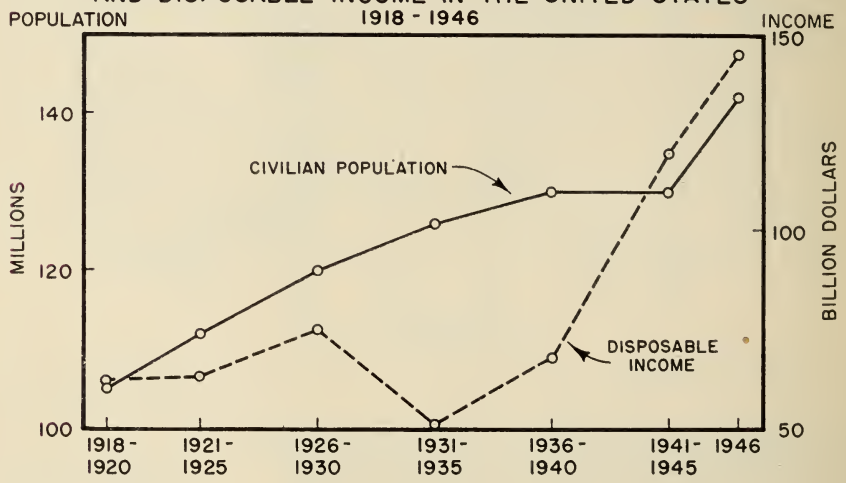
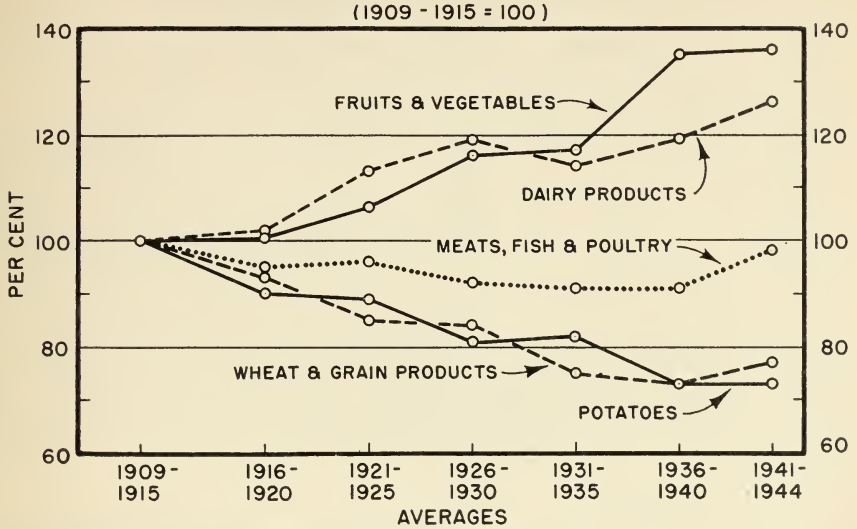


Table 2

UNITED STATES PER-CAPITA CIVILIAN CONSUMPTION OF CANNED TOMATOES AND COMPETING ITEMS

Period	Canned tomatoes	All canned vegetables	All fresh vegetables
	Per cent (1936–1940 = 100)		
1918-1920	96.2	64.0	85.1
1921-1925	96.9	68.6	85.1
1926-1930	96.0	79.5	89.7
1931-1935	91.9	75.7	93.8
1936-1940	100.0	100.0	100.0
1941-1945	83.4	117.5	105.9
1946 (estimate)	79.7	131.1	110.4

FIG. 9: TRENDS IN UNITED STATES PER-CAPITA CONSUMPTION OF SELECTED FOOD GROUPS: 1909 - 1944



spend on various foods, and is a decisive influence on the market demand for tomatoes. Consumer income depends on the economic health of the entire country, and has had its ups and downs in past years (fig. 8). Growers will remember the effects of low income on the demand for farm products during the depression years of the early 1930's. During the war, on the other hand, income rose to a new high—averaging 120.2 billion dollars per year during the years 1941–1945, and reaching 144.5 billion dollars in 1946, the highest figure in history. This unprecedented increase in consumer income and the maintenance of price ceilings caused the all-time record high consumption of tomato products during the war years.

Eating Habits.—Eating habits in recent years have shifted toward foods lower in calories per unit weight, but higher in vitamins, minerals, and animal

Table 3

UNITED STATES PER-CAPITA CIVILIAN CONSUMPTION OF TOMATO JUICE AND COMPETING ITEMS

Period	Tomato juice	All canned fruit juices	Fresh oranges
	Per cent (1936–1940 = 100)		
1918-1920	0	7.8	....
1921-1925	0	5.7	58.5
1926-1930	3.0	10.7	68.4
1931-1935	44.3	25.1	86.1
1936-1940	100.0	100.0	100.0
1941-1945	137.8	132.6	142.7
1946 (estimate)	172.2	225.6	150.3

proteins. People are eating more fruits and vegetables, more dairy products, less of wheat and grain products, and fewer potatoes than they did twenty-five to thirty years ago (fig. 9). This change has been partly due to more people living in cities and working indoors, and partly due to lower costs in transporting and handling fruits and vegetables. Tomato products also have recently been used to an increasing extent in infants' and children's diets.

Canned tomatoes in solid form have been meeting strong competition from other canned vegetables and from fresh vegetables in the consumer's diet. During 1941–1945 consumption of canned tomatoes was only 83 per cent of what it had been during 1936–1940, while consumption of all canned vegetables increased 17.5 per cent and all fresh vegetables marketed commercially increased 5.9 per cent (table 2).

Tomato juice also meets strong competition from other canned juices and from fresh orange juice. Comparing again the five-year period 1941–1945 with 1936–1940, per-capita civilian consumption of tomato juice increased 37.8 per cent, canned fruit juices, 32.6 per cent, and fresh oranges, 42.7 per cent (table 3). (A large percentage of fresh oranges sold is consumed in the form of orange juice.)

Recent War Production

The years 1941-1945 stimulated production for the armed services and increased civilian consumption at the same time

Diversion for War Purposes.—World War II caused a large expansion of tomato production. In order to meet the requirements of the armed services and the lend-lease program for canned tomatoes and products, processors were required to set aside a percentage of the pack for priority of sale to government agencies. To assure production of the necessary tonnage of fresh tomatoes, the government announced official support prices to growers.

FIG. 10: UNITED STATES SHIPMENTS OF CANNED TOMATOES AND PRODUCTS TO CIVILIANS AND FOR WAR AND EXPORT 1936 - 1946

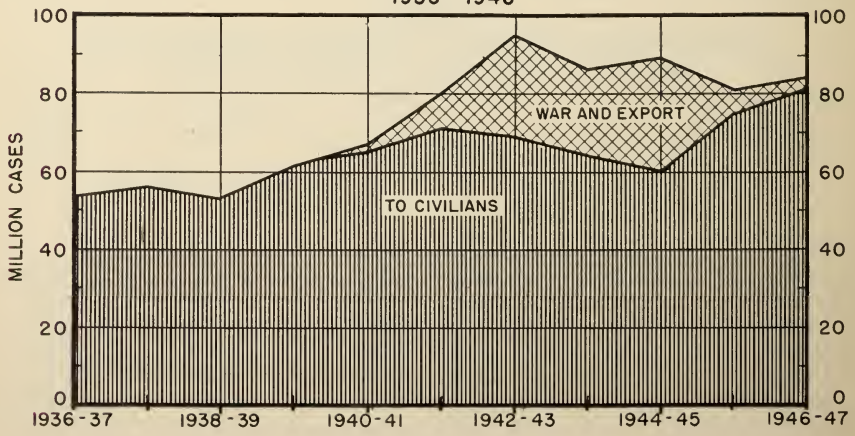


Table 4

UNITED STATES SHIPMENTS—SUMMARY*

Averages	Total shipments	Exports and war services	To civilians
	Million cases (basis, 24 No. 2 cans)		
1936-37 to 1940-41	58.2	−0.8†	59.1
1941-42 to 1945-46	86.1	18.1	68.0
1945-46	81.3	6.0	75.3
1946-47 (estimate)	90.3	3.1	87.2

* Does not include tomato soup and other miscellaneous products.
† Net imports, not shown in figure 10.

The increase in production of canning tomatoes during the war was so great that even after diverting a large fraction of this production for export and war services, civilian consumers within the United States ate more than ever before (fig. 10). Shipments of canned tomatoes and other products from canners' and wholesalers' stocks (excluding tomato soup and miscellaneous products) during the period 1936–1940 averaged 58.2 million cases per year; this increased to 86.1 million cases per year during the period 1941–1945 (table 4). Shipments to United States civilians in 1936–1940 (including a small quantity of imports) averaged 59.1 million cases per year and increased to 68.0 million cases in the period 1941–1945. This period included the point-rationing program for canned fruits and vegetables but also included a number of months when there was no rationing.

Of the various products, the war requirements were greatest for canned tomatoes. Shipments to civilians were cut sharply to meet these demands. Tomato juice shipments were cut to a lesser degree. In the case of the other tomato products, export and war shipments were not so important in comparison with total shipments, and civilian consumption increased steadily throughout the war years.

Stocks.—The increased consumption of tomato products during the war was achieved partly by drawing on stocks in the hands of canners and distributors. From 1938 on, stocks declined steadily until in 1946 they had almost

Table 5

UNITED STATES CARRY-OVER OF CANNED TOMATOES AND PRODUCTS*

Averages	Canned tomatoes	Juice	Other products	Total stocks
	Million cases (basis, 24 No. 2 cans)			
1936-1940	10.8	4.4	6.7	21.8
1941-1945	6.2	4.2	3.6	13.9
1945	2.6	4.4	1.7	8.7
1946 (estimate)	0.2	0.5	0.9	1.6

* Does not include tomato soup and other miscellaneous products.

disappeared. Total stocks of canned tomatoes and other tomato products in hands of canners, wholesalers, and chain-store warehouses averaged 21.8 million cases during the years 1936–1940, fell to 13.9 million cases during the years 1941–1945, and fell further to an estimated 1.6 million cases in the summer of 1946 (table 5). These figures do not include stocks on the shelves of retail stores, restaurants, or homes. It is reasonable to suppose that these stocks have also dropped somewhat during the war years.

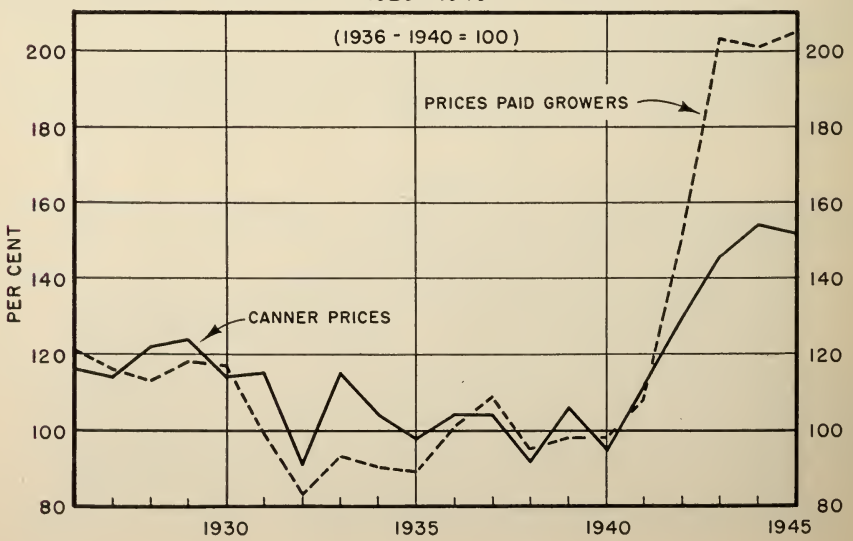
Prices

Growers' prices tend to follow those received by canners . . . government supports bolstered prices during the war

Prices Paid Growers.—The prices that will be offered growers on contract, as well as the amount of acreage contracted, will reflect canners' opinions on the demand situation. If the demand for the product promises to be strong, then canners' demand for acreage is likely to follow suit. The better informed both parties are on the market situation, the more likely the contract is to be a fair one. The prevailing prices for canned products at the time of making contracts with growers give some (but by no means complete) indication of the profitability of the canning operation. During peacetime years in the past, there has been a fairly consistent relationship between prices received by canners for tomato products and prices paid growers (fig. 11). (In this figure both prices are taken as a percentage of the 1936–1940 average; the canner price index is a weighted average of quoted prices on six different items.)

The Subsidy Program.—During World War II, in order to assure growers the support prices for raw tomatoes and still hold to OPA ceiling prices on

FIG. 11: RELATIVE CHANGE IN CANNER PRICES FOR CANNED TOMATOES AND PRODUCTS AND PRICES PAID GROWERS 1926 - 1945



canned goods, the government paid a subsidy to canners to offset increases in raw material costs. Because of this program the quoted prices of canners in 1943, 1944, and 1945 (indicated in figure 11 are lower than the actual dollars received including the subsidy and do not show as steep a rise in these years as prices paid growers. When the program was discontinued in 1946, ceiling prices on canned products were allowed to be raised. After the complete removal of OPA price ceilings in October, 1946, prices on tomato products increased again, and these higher prices may cut down civilian consumption in the near future.

The Outlook

The large pack in 1946 will lower the 1947 demand . . . outlook is favorable if consumer income continues at a high level

For 1947–1948.—The United States 1946 tomato pack was the largest in history, exceeding even those of the war years, which were all big. Although final figures are not available at the present writing, it is estimated that the pack, excluding tomato soup, vegetable juice combinations, and other miscellaneous products, will be 96.7 million cases (No. 2 can basis). This compares with an average of 82.6 million cases per year during the five years 1941–1945, and 58.8 million per year during the five peacetime years 1936–1940. As stated earlier in this circular, during 1941–1945 a substantial fraction of the packs was shipped to the armed services and abroad—an average of 18.1 million cases per year. During the marketing year 1946–47, it is estimated that only 3.1 million cases will be taken for these uses. This means that there is an unusually large supply available for civilian consumption, and that distributors' stocks—lowered during the war years—will be at least partially refilled.

In addition to a large pack of tomato juice for 1946, there were also large packs of citrus and pineapple juice, which to some extent compete with tomato juice.

The demand of California canners for tomato acreage in 1947 and 1948 will depend on how well the large 1946 pack moves into consumer hands. Although canners' sales to distributors have been large, it is not yet known just how much of this movement has gone to the final consumer and how much has gone to stocking up retail stores. It is forecast by the United States Department of Commerce that of the packs considered above, 87.2 million cases will be moved from wholesale distributors and chain-store warehouses to retail stores in the marketing year 1946–47. But this movement averaged only 68.0 million cases during 1941–1945 and only 59.1 million cases in 1936–1940. Such a large movement as is forecast for 1946–47 can take place only by filling up retailers' (and also household) stocks, and does not represent final consumption. It should be remembered also that in 1945 and in early 1946, consumer incomes were unusually high, and price ceilings were still in force. In 1947 food prices are much higher, and responsible economists predict some decline in income. It seems clear that even under favorable conditions, canners' demand for tomatoes will not be so strong in 1947 as it was in 1946.

In the Longer Run.—In the next few years the market demand for canning tomatoes will probably be high provided there is continued economic prosperity in the United States. Population in the United States will for some years continue to increase at a rate of about a million per year. Local producers will be favored by a shift of population to California from other sections of the country. The increased use of tomato products other than canned tomatoes—brought about by the war—will probably persist into the future, and this will also favor California. The shift of food habits that has taken place in past years will also probably continue, and will favor fruits and vegetables.

During the war, many families that had previously bought little or no tomato products found that they could afford these items for the first time. Even if these families do not continue to receive the high wartime incomes, it is probable that they will still use more tomato products than they did before the war. Many veterans of the armed services, accustomed to giving unpalatable meat a heavy dose of catsup, may find the habit persisting into peacetime.

Whether these favorable long-run trends will be felt by California tomato growers or not will depend on the income and price situation in the United States as a whole. If another depression occurs, tomatoes will be strongly hit. If a continued high level of income is maintained and prices remain at reasonable levels, large sales of tomatoes can be expected. It will be to the material advantage of California growers to interest themselves in public policies that will tend to create economic prosperity in the United States.

SOURCES OF DATA

The principal sources used to obtain the data which are summarized in this circular are:

(1) United States Bureau of Agricultural Economics. Commercial Truck Crops for Processing (Annual Issues).

(2) United States Bureau of Agricultural Economics. Production and Consumption of Vegetables, United States, 1909–1943; Production and Consumption of Fruits, 1909–1940; The National Food Situation (August, 1944).

(3) California Crop and Livestock Reporting Service. Vegetable Crops in California (Annual Issues).

(4) National Canners Association. Canned Food Pack Statistics.

(5) Canners League of California, Bulletins.

(6) United States Bureau of Foreign and Domestic Commerce. Fruit and Vegetable Canning Industries. Industrial Series No. 15 (1945).

(7) United States Bureau of Foreign and Domestic Commerce. Industry Report, Canned Fruits and Vegetables: Production and Wholesale Distribution (Quarterly) (1946).

(8) United States Department of Agriculture. Yearbook of Agriculture, 1932; Agricultural Statistics.

(9) California Fruit News (Weekly).

The tables and figures appearing in this circular are summaries of more detailed tables, which are published in a separate Statistical Supplement in mimeographed form and which give the sources in detail. This supplement can be obtained by writing to the Giannini Foundation of Agricultural Economics.

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